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ABSTRACT

Behavior analysts are having their professional identities challenged by the roles that cognition and biology are said to play in the conduct and outcome of applied behavior analysis and behavior therapy. For cogniphiliacs, cognition and biology are central to their interventions because cognition and biology are said to reflect various processes, structures, and states that cause, mediate, or change dysfunctional behavior-environment interactions. For cogniphobics, cognition represents an unwarranted return to mentalism and an unnecessary obsession with epiphenomena, whereas biology represents an unwarranted return to reductionism and an unnecessary obsession with the materialistic side of Cartesian dualism. On the side of cognition, the cogniphiliacs are right. Applied behavior analysis needs to provide a comprehensive, explicit account of behavior-environment interactions. The cogniphiliacs' argument for explanatory cognitive and biological concepts, though, often seems little more than a reversion to mentalism. On the side of behavior, the cogniphobics are right. Cognition-as-process and biological reductionism as explanation have no place in a natural science of behavior. The cogniphobics' lack of reference to historical and current contextual conditions, however, suggests that they are in part responsible for the misconceptions of the science of behavior. Contextualism may be the treatment of choice in working with cogniphilia and cogniphobia. (Seventy-seven references are appended.) (NB)

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Context, Cognition, and Biology in Applied Behavior Analysis

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Context, Cognition, and Biology in Applied Behavior Analysis

Before starting, I want to make two brief comments. First, I abhor hearing the same convention paper presented twice, so I warn you that I presented half of this afternoon's material at last November's meeting of the Association for the Advancement for Behavior Therapy (AABT). I realize that the membership overlap between AABT and ABA is only about 10%, but if some of that 10% is present, you are forewarned, and I apologize -- and I also feel guilty as hell. Second, I am going to be a bit contentious. In general, I value papers that integrate material from disparate sources more highly than those that make unfriendly comparisons, but I thought I would try a bit of the latter for a change. I could argue for some possible heuristic gain in doing so, but perhaps my real excuse is having found a metaphor I wanted to play with. Anyway, let me begin.

Behavior analysts seem increasingly to find themselves conflicted. I am not referring to the personal, existential anxieties we all face with respect to uncomfortable tensions between our personal sense of free will and our intellectual commitment to the lawfulness of behavior -- these have always been with us. To our credit, and unlike most psychologists, we have usually dealt with these anxieties as problems of personal identity, have handled them as behaviorally as we could, and have not let them intrude into our profession as explanations for behavior. Rather, we have taken these as behavior to be explained (Day, 1980; Kantor, 1963, 1969). Increasingly, however, our professional identities are being challenged by a related set of problems -- the roles that cognition and biology are said to play in the conduct and outcome of applied behavior analysis and behavior therapy (Biglan, 1987; Biglan & Kass, 1977; Grossberg, 1981; see also Morris, Higgins, & Bickel, 1982).

This latter conflict is manifested by more than just a few simple neuroticisms, but rather by syndromes of often psychotic proportions -- what I have generically referred to in other contexts as "cogniphilia" and "cogniphobia." For the cogniphiliacs, cognition and biology are central to their interventions because cognition and biology are said to reflect various processes, structures, and states that cause, mediate, or change dysfunctional behavior-environment interactions (see Bandura, 1977; Kendall, 1984; Meichenbaum, 1879; Meichenbaum & Cameron, 1982). In contrast, for the cogniphobics, cognition represents an unwarranted return to mentalism and an unnecessary obsession with epiphenomena (Skinner, 1977), whereas biology represents an unwarranted return to reductionism and an unnecessary obsession with the materialistic side of of Cartesian dualism (see Wilson & Herrnstein, 1985). In keeping with our times, the ardent cogniphobic would urge us to "Say no to cognition."

The symptoms of the cogniphiliac and cogniphobic have been treated before, on many occasions, and sometimes ad nauseam, but not always effectively so -- symptom substitution has been the rule. But, symptom substitution should not be surprising because, I think, most cogniphiliacs and many cogniphobics are also methodological behaviorists, and methodological behaviorists are especially susceptable to the ravages of cognition and biology. The cogniphiliacs, in this case, accept the causal status of cognition and biology, use the methods of science, and study behavior in order to make inferences about cognition and biology -- all for tge purposes of constructing theories that are said to have heuristic value. The cogniphobics, in contrast, have repressed what they once instinctively knew was the causal status of cognition and biology because the verbal communities in which they later found themselves severely

punished for such talk. In either case, methodological behaviorism is not good science -- it is only scientistic. It has the trappings of objectivity without a scientific conceptualization of the subject matter. (See, I said I would be contentious.)

Obviously, then, what we need to treat are the underlying causes of cogniphilia and cogniphobia, not their superficial manifestations -- and for this there is some hope. The therapy? No, it is not cognitive-behavioral eclecticism. Not only is eclecticism confusing, but it does not resolve the conflict -- rather, it is symptomatic of a deeper-seated bi-polar intellectual disorder. Instead, the therapy is the world view of contextualism, and is so for at least two reasons.

First, contextualism is a proper alternative to the cogniphiliac's and cogniphobic's world views. The cogniphiliac holds to the assumptions of mentalism and reductionism, which are construed either organismically, as in the Piagetian perspective (e.g., Piaget, 1971), or mechanistically, as in the work of those who adopt the computational, information-processing metaphor (e.g., Ingram & Kendall, 1986). The cogniphobic, in turn, holds to the assumptions of mechanism and environmentalism. In doing so, however, the cogniphobic has promoted a view of behaviorism in the media, educational materials, and professional literatures that make it appear but a caricature of J. B. Watson's methodological behaviorism, thereby promoting misconception and miseducation about behavior analysis (Morris, 1985a; Todd & Morris, 1983). Contextualism, or at least increased emphasis on the contextual nature of behavior, may prove an effective antidote for these problems.

The world views involved here -- organicism, mechanism, and contextualism -- are obviously issues of metatheory, and hence beyond the more immediately pragmatic issues I want to raise this afternoon. But I

wanted to at least bring up the philosophical matter because my best guess is that contextualism will probably become the behavior analyst's explicit world view.

Stephen C. Pepper first discussed and labelled this view in his 1943 book World Hypotheses (Pepper, 1943, pp. 323-379), which makes for odd but interesting reading. Contextualism in a mentalistic form is increasingly appearing in the general psychological literature (Rosnow & Georgoudi, 1986), especially in developmental psychology (Lerner, Hultsch, & Dixon, 1983). Contextualism, construed behaviorally, is implicit, I think in much of the work of more theoretically inclined behavior analysts (e.g., Bijou & Baer, 1978; Day, 1969a, 1969b; Dietz & Arrington, 1984; Moore, 1985). Explicitly, however, not much is yet available, though Steve Hayes has begun to promote this view (Hayes, 1986; Hayes & Brownstein, 1986), and I think more will be in the offering from others (see Morris, 1982, 1985b, 1985c; for an already extant contextual behaviorism, see Kantor, 1924, 1926, 1959, 1971; Pronko & Herman, 1982; Sarbin, 1977).

If you asked me to describe contextualism in twenty-five words or less, I am not sure I could do so. I am not even sure I could do that for radical behaviorism; I know -- I tried once. Anyway, one such decription of contextualism might go something like this: Acts must be studied in context; context gives acts their meanings; their meanings emerge from historical causation; in historical causation, change is a constant; effective change or effective action (i.e., "successful working") is the pragmatic criterion of truth. You will probably want me to unpack those thirty-five words, but I left the keys to that considerable luggage in my office in Kansas. Some inductive sense of contextualism, however, may be gleaned from the material to follow, so let me move on.

The second reason why contextualism is the proper therapy for cogniphilia and cogniphobia is more the focus of my presentation: Contextualism compels an explicit consideration of the role of contextual influences on behavior, thereby resolving many of the symptomatic concerns of the cogniphiliac and cogniphobic, yet remaining within the framework of a natural science of behavior. In what follows, I focus on this more immediately practical issue of contextual determinants in applied behavior analysis. I will speak first to the role of historical and current contextual conditions affecting behavior and, second, to cognition as behavioral content, that is, as client-behavior-in-context. Let me begin with the historical and current contextual conditions.

Historic and Current Contextual Conditions

One of the more strongly-voiced claims of the cogniphiliacs is that behaviorism does not include enough factors for a sufficient account of behavior. Specifically, they argue that the three terms of the three-term contingency -- (1) behavior and its relationships with (2) antecedent and (3) consequent stimuli -- exclude the important roles of cognition and biology (Bandura, 1977; Molloy, 1984, 1985). In their view, the contingency should have five terms. In reply, the irritated cogniphobic insists that the inclusion of cognition and biology is mentalistic and reductionistic (Birnbrauer, 1985). The problem, though, is not about what to include or exclude -- any facts that lead to talk of cognition or biology should not be dismissed. The problem is how best to describe those facts, the contexts to which they are related, and the roles they play in the behavior analysts' assessment and treatment of dysfunctional behavior.

We may readily agree with the cogniphiliacs: Two more factors do need to be added to the three-term contingency. But we may also agree with the cogniphobics: Those factors are not going to be cognition and biology, at

least as construed by the cogniphiliac. Rather the two additional factors are (1) the historical context of behavior, that is, the effects of past interactions in producing current behavior-environment relationships, and (2) the current context, that is, the effects of the current setting on those relationships (Morris, 1986b; see Morris & Larsen, 1986).

Prologue

Before describing these two sources of contextual influence, I would like to suggest why overlooking them has, in part, led to the conflict between the cogniphobics and the cogniphiliacs. You may recall that Joe Brady (1981) once remarked: "Psychology is to the experimental analysis of behavior what astrology is to astronomy." Let me begin my argument by updating offering an analogy of the same form by making the bold claim that creationism is to biology what cognitive science is to psychology. (Contentiousness runs amok.)

One of the cultural beliefs that Darwin's theories had to overcome was that the complex within and between species variability and adapability in flora and fauna could not have emerged through evolution via such a simple process as natural selection and related mechanisms. The variability and adaptability could only be accounted for by the workings of an almighty mind or creator (see Dawkins, 1986). Darwin (1859, 1871) successfully challenged that view, and a natural science account of biological diversity and variability is now generally accepted.

In an analogous fashion, those who promote a natural science of behavior hear a very similar criticism. The criticism is this: The variability in human behavior -- that is, the individual differences across people and within them over time -- cannot be accounted for by such a simple process as reinforcement and the three-term contingency. Rather,

the diversity and variability can only be accounted for by the workings of an active and creative mind.

The answer to this criticism lies, in part, in the roles played by historical and current context. With respect to behavior, the three-term contingency is generic and singular, and does not explicitly incorporate contextual conditions. Because of this, the cogniphobics who take the three-term contingency as their model of behavior often overlook how the context of those contingencies produces complex individual differences and variability. For their part, the cogniphiliacs, never seeing these contextual influences in the first place, explain individual differences and variability in terms of cognition and biological reductionism. In actuality, however, it is the historical and current contexts that account for much of this variability. Let me speak first to the historical context.

The Historical Context

As I mentioned previously, the historical context refers to the effects of clients' past interactions in producing current functional relationships between their behavior and environment. That is, historical causation operates to impart interdependent functions or "meanings" to the environment and the behavior with which it interacts, and does so in two ways -- phylogenically and ontogenically. A contextual analysis of the former -- phylogeny -- deflects the cogniphiliacs' notion of biological causation, and an analysis of the latter -- ontogeny -- deflects their notion of cognitive causes.

Phylogenic history. I am not going to go very far with phylogenic history. Despite the recurring misunderstandings that behavior analysis has no place for an evolutionary perspective (e.g., Gould & Marler, 1987), Skinner and others have spoken at length about the contributions of

phylogeny to behavior (Skinner, 1966, 1975, 1981; see also Delprato, 1979; Kantor, 1947). To be brief, phylogenic history is an important source of our clients' (a) biological structure and functioning, (b) unconditioned relationships within respondent and operant behavior, (c) the very processes of respondent and operant conditioning, themselves, and (d) variability in all those domains. I cannot see what could be more obvious. For fuller and more eloquent discussion of these and other pertinent issues, I strongly recommend Jack Michael's (1985) APA Master Lectures Series chapter on behavior analysis and Ellie Reese's (1986) G. Stanley Hall Lecture Series chapter on learning -- both of them are excellent; for a briefer but to the point analysis, I recommend Marc Branch's (1987) recent article in the AABT newsletter, The Behavior Therapist.

The only interesting questions for applied behavior analysts remain the extent to which individual variability in everyday life is a function of variability derived from these phylogenic domains, which I doubt is very much, but that is an empirical question, not an idiological stance. I will return to this issue a little later.

Ontogenic history. More interesting and accessible to applied behavior analysts is the ontogenic or interactional history that occurs over our clients' lifetimes. Their interactional histories are the sources of the acquired functional relationships between their behavior and environment, and are an important source of the individual differences and variability in those relationships. For instance, interactional history conditions stimuli as reinforcers and as discriminative stimuli. The actual stimuli that function thusly differ across clients as the result of their different histories, and these form-function relationships differ within clients over time due to continual changes in their histories.

Likewise, our clients' responses are differentially conditioned to serve various respondent and operant functions with respect to the enviornment, and these, too, change over time. The actual response forms of a particular response function will differ across clients and within clients over time because of differing and changing histories.

Although ontogenic historical causation is fundamental to behavior analysis, it is not always a readily explicit characteristic of the approach. Because of misunderstandings this oversight creates, I explicate further, especially where historical causation helps resolve some long-standing problems in the trait-situationism controversy.

In an important sense, our clients, are "active" participants in their interactions with the environment. That is, their behavior represents a reciprocal interdependence with the environment, and is affected as much by clients' historically-derived response functions for their environment as it is by their environment's historically-derived stimulus functions for responding. Because these relationships differ from one person to another, applied behavior analysts strive to individualize their procedures and programs where possible, both with respect to what aspects of the response repertoire need altering and with respect to what will be, and need to be, effective eliciting, reinforcing, punishing, and discriminative stimuli.

In saying that clients are active contributors to their behavior, though, I do not mean to imply that they are autonomous agents in control of it -- that is the cogniphiliac's position. Likewise, however, neither am I asserting that the environment is an ultimate autonomous cause -- that is the cogniphobic's position. For practical purposes, of course, applied behavior analysts adopt the strategy of manipulating the environment because typically that is all that can be done. The tension between these two views of causality is at the heart of the trait-situationism debate,

which shares some logical characteristics and pitfalls with the nature-nurture issue, both of which are clarified by a contextual perspective, hence I elaborate briefly.

Within the view presented thus far, stimulus and response functions develop simultaneously and are defined with respect to one another. As such, stimulus functions have no more control over behavior than do response functions -- the two are interdependently and mutually defining. A situation does not compel a response to occur except through a person's historically derived response functions for that situation; and a person does not compel a response to occur except through the situation's historically-derived stimulus functions for that response. Thus, situations do not possess independent or inherent power to control behavior any more than people possess independent power to control behavior through their personal traits. Both are products of interactional histories unique to each individual, hence the phenomenological character of this view (see Day, 1969a). Predictions about behavior, of course, can be made on the basis of information about the person and on the basis of information about the situation, but the ability to do so does not confer causal power on either source.

Clearly, our clients react differently to seemingly identical aspects of the environment, they react identically to very different aspects of the environment -- both of which change over time. This is very complex stuff, especially as historical causation is difficult to see, but then evolution is not so immediately apparent either. Without an appreciation that historical causation produces these relationships, the cogniphiliacs, like the creationists, explain this complex and variable stuff in terms of creative powers lying outside the actual subject matter of the science.

That is, explanations of behavior often become couched in terms of various constructs, including not only traits, but also "expectations," "locus of control," and "self-efficacy." These constructs, however, are no more than shorthand descriptions of the effects of historical causation (see Biglan, 1987; Morris, 1985b). In a very real sense, applied behavior analysts change deviant functional relationships between responding and the environment by providing prosthetic histories. Through such changes, behavior changes and so does what people report as changes in their expectations, locus of control, and self-efficacy.

This latter point is not an argument against the role that one of a person's responses, for instance, a statement of expectation, may play as the environment for another of that person's behaviors. People commonly react, both publically and privately, to what they themselves do and say, yet this remains within the realm of the functional relationships between responding and the environment (Hayes & Brownstein, 1986).

On a related note, I always find it odd the sorts of metaphorical models that psychologists use to account for the private evidence of the mind. Freud used hydraulics, Piaget used biology, and the cognitive scientists use the computer. It seems to me that if one wants a model for the private evidence of mental activity -- that is, a model for private events -- then that model should simply be the public evidence -- overt behavior and the controlling relationships into which it enters. At least it is more model than metaphor.

In any event, and returning to the main thread of my argument, without an appreciation that historical causation can produce these interrelationships, the cogniphiliacs not only appeal to creationism, but they also commonly account for the lack of one-to-one correspondence between behavior and the environment by making inferences about the

existence of contiguous cognitive mediators such as self-efficacy, self-esteem, expectations, anticipations, perceptions, beliefs, and mental representations. In contrast, the contextual position is that behavior is defined in terms of interrelated functional classes of stimuli and responses (Skinner, 1935; see Meehl, 1985), and is not restricted by temporal contiguity, but rather is enriched by accepting action-at-a-temporal-distance (Marr, 1983). Interestingly, the cogniphiliac's logic is not unlike Freud's: Freud attempted to make psychodynamic history contiguous with behavior through its mediation by the current structure and functioning of the personality (see A. Freud, 1935). In neither case, however, is there anything to mediate -- behavior-environment relationships exist directly. If dysfunctional behavior is a symptom of anything, it is of a client's history, not of hypothetical cognitive or personality processes, structures, or states.

In an important sense, then, cognitive theories are non-heuristic in that they overlook making inferences and asking questions about the historical context (which can be directly altered) in place of making inferences about supposed cognitive processes, structures, and states. Weiner's research on the effects of reinforcement schedule histories (Weiner, 1981), Sidman's research on stimulus equivalence training (Sidman, 1971; Sidman & Tailby, 1982), and Epstein's research on the integration of independently acquired response repertoires (Epstein, Lanza, & Skinner, 1981) comes -- at least implicitly -- from inferences about historical causation, not from inferences about cognition (cf. McKearney, 1977).

The Current Context

Let me move on now to discuss the effects of current contextual conditions, which make the picture more complicated. As just described,

the historical context imparts functions to stimuli and responses -- without history there would be no behavior. Given a historical context, however, the particular stimulus and response functions (a) that will occur on a particular occasion and (b) that can occur depends on the current context. What will occur depends on the function of the current context; what can occur depends on its structure. I will deal with the latter first.

The structure of the current context. The structure of the current context seems relatively noncontroversial. Basically, it may be parsed into biological structure and environmental structure, both of which affect what behavior can and cannot occur on a particular occasion.

The biological structure affects what a person can or cannot physically accomplish. Differences obviously exist across people in these regards, and within them over time. For instance, differences across physiogonomy will affect what activities a person may excell in, and changes in body constitution across a lifetime obviously affect behavior. In addition, other biological factors, such as physical injury or the effects of drugs, may have local and more transient effects.

These influences notwithstanding, I want to be clear that, from a contextual perspective, biology does not cause or explain behavior in any behavioral sense. In saying that, I am not making the silly claim that biology is irrelevant to behavior -- of course it is relevant, but not as the cogniphiliacs would have it map onto their cognitive constructs and processes. The cogniphobics quite properly resist such physiologizing, but they overgeneralize. Indeed, one of the symptoms of cogniphobia is the failure of nerve to confront biological factors head on. The cogniphobics' rational fear of physiological reductionism and physiological creationism needs to be distinguished from their pathological fear of biology more

generally. The value of contextualism, here, is to point out that biology is a context for, not a cause of behavior. It is one physical context in which the three-term contingency operates and in which certain behaviors are allowed and others disallowed. But it does not actually make behavior happen in any useful or interesting sense.

Likewise for the environmental structure or physical ecology -- the other physical context in which the three term-contingency operates. The physical construction of the environmental structure places obvious limits on what behavior can and cannot occur. The environment in this sense is also not usefully considered a psychological cause of behavior, though clearly it is important and should not be overlooked as a means for affecting behavior. It, like the biological structure, though is generally of less interest to applied behavior analysts, especially those interested in building behavior and changing behavior-environment relationships. With regard to the latter, it is the function -- not the structure -- of the current context that is of more interest and pragmatic value.

The function of the current context. Whereas the historical context determines what functional relations may exist between behavior and environment, and the structure of the current setting influences what behavior entering those functional relationships can occur, the current context also operates functionally to determine which of those functional relationships will occur, given that they may and can. Thus, whereas the historical context produces sometimes difficult-to-understand individual differences and variability in client interactions, and the structure of the current context modulates what can occur, the function of the current context magnifies the variability further and makes it even more difficult to understand, so let me begin with a simple example.

The effects of deprivation and satiation on the function of stimuli as reinforcers is well enough understood, as is the corrolary that individual variability in reinforcer effectiveness is, in part, due to differences in relative amounts of deprivation. Nothing is gained by accounting for this variability in terms of a client's differential perception of a stimulus's "reinforcingness." In a similar vein, the occurrence of aversive stimulation can produce emotional predispositions that affect the function of other stimulus events. Wahler's work with isolated mothers, for instance, suggests that aversive encounters with social welfare agencies affect the function of their children's nagging at a later time -- that nagging becomes aversive, whereas otherwise it might have had no effect (Wahler & Fox, 1981). Again, we do not need to appeal to the mothers' attributions, perceptions, or self-efficacy. Rather, we can appeal in both cases to what Jack Michael (1982) calls the effects of "establishing operations."

Moreover, variability in the function of stimuli as conditioned reinforcers and discriminative stimuli seems also related to similar factors, as well as to particular schedules of reinforcement (e.g., McKearney & Barrett, 1978) and conditional stimulus controls (e.g., Sidman, 1986). Conditional stimulus control is exemplified in Sidman's research on equivalence classes which demonstrates that the control of discriminative stimuli and their related response classes is conditional on context (Sidman, 1971; Sidman & Tailby, 1982). Conditional stimulus control is also exemplified in rule-governed behavior (Skinner, 1969, pp. 133-171). For instance, the instructions and advice we give to clients may alter the functions or meanings of other stimulus events in their lives, which in turn affects their behavior in the future (see Schlinger & Blakely, 1987; Zettle & Hayes, 1982). We might say that a client's perception of the

world was changed in some way, but the perception was not the cause of the change, rather the conditional control was the cause -- "perception" was how we chose to describe it.

Like historical context, current contextual conditions are not always discrete events contiguous with behavior or easily observed. Interestingly, we should note that an important controlling variable over the behavior of the cogniphiliacs is the lack of a contiguous relation between the behavior of their clients and the environment. That is, the inference made by cogniphiliacs about cognition are controlled, in part, by this temporal gap. Instead of making inferences about constructs that lie outside of behavior, however, it would seem more heuristic to make inferences about the current context (cf. Hawkins, 1986, pp. 365-367).

Summary

To summarize this section, individual differences and variability in behavior require an explicit account of the historical and current context of behavior. Because research generally controls for historical context, both phylogenic and ontogenic, and controls for the current context, both in structure and function, the cogniphobics have often overlooked these conditions or do not deal with them explicitly, and hence have appeared mechanistic and simplistic to others. They also seem to have overlooked much that is interesting about behavior for the rest of psychology (Baron & Perone, 1982; Harzem, 1985). In contrast, the cogniphiliacs have been led by this variability to infer cognitive and biological mediators for the behavior-environment relationship. The effects that these mediators describe and supposedly explain, though, are actually names for the dynamic outcomes produced by historical and current context.

Before turning to the next section, I would like to make one related comment. Behavior analysis is said to adhere to the principle of parsimony in the explanation of behavior, usually meaning that the simplifying explanations of behavior based on basic behavioral principles are to be preferred over complex explanations based on mental structures, processes, and states. This analytic strategy does not deny the occurrence of behavioral relationships referred to by such terms as "consciousness," "personality," and "cognitive problem-solving." Although subjective, these terms denote important characteristics of behavior described by members of our linguistic community (Deitz & Arrington, 1985; Morris, 1985c; Skinner, 1945). These terms are descriptive and the interactions to which they refer need explaining at the level of behavior itself -- not at other levels or in other conceptual systems. These interactions are explained behaviorally by taking into account the behavioral processes involved and the current and historical contexts in which they occur. In an interesting sense, then, explanations of a behavioral nature are actually more complex than those that appeal to cognitive and biological constructs -- and the cogniphiliacs should not be allowed to say otherwise. Cognitive and biological constructs are simple in comparison to behavioral explanations and, to turn Chomsky (1959) back on himself, free for the asking. That is, behavioral relations referred to in terms of "personality" and "consciousness" are easy to explain in terms of hypothetical structures, processes, and states whereas, in contrast, the behavioral relations they refer to, the complex conditions under which they occur, and the historical and current contexts of which they are a function are much more difficult to analyze, especially after the fact.

That said, I would like now to turn to a distinction between behavioral process and behavioral content that allows for what I think is a

useful parsing of the cogniphiliac's obsessions and the cogniphobic's fears.

Process and Content

As for behavioral content, clinical problems are quite obviously related to substantive conditions in the lives of people in trouble, the interactions between which we describe in ordinary language terms. For example, we describe their problems (a) in terms of what people say to and about themselves -- commonly referred to as their perceptions, expectations, and attributions about, for instance, how other people view them or how they are affected by stress; (b) we describe their problems in terms of their feelings -- for instance, their fears and anxieties over school, sexual relations, and being overweight; and (c) we describe their problems in terms of their patterns of behavior -- spoken of in terms of personality traits, such as shyness, aggressiveness, and hyperactivity. Dysfunctional behavior, then, is complexly interrelated with a vast number of substantive personal (that is, historical) and situational (that is, contextual) conditions of the world in which clients live. This is behavioral content -- which we must understand if client behavior is to be described and predicted accurately and changed effectively.

In contrast, behavioral processes refer to the principles of behavior in a generic sense, devoid of any particular content, as in, for instance, the principle of reinforcement (see Catania, 1984, pp. 2-219). These processes are not about any particular type of behavior, but rather about behavior qua behavior. Although the analysis of behavior in terms of its basic processes includes a multitude of laws and interrelationships, the analysis of behavior in terms of its content includes a great deal more. It is one thing to analyze behavior in terms of the generic three-term

contingency, but quite another thing to realize that that contingency represents, in real life, an innumerable array of specific behavioral forms and functions, as well as content-related aspects of behavior and environment.

Earlier, I spoke about how behavioral variability not uncommonly evokes cogniphilia when historical and current contextual conditions go unappreciated. In its own way, the additional overwhelming variability of behavioral content gives rise to similarly unwarranted but simplifying cognitive assumptions. These assumptions seemingly have to do with cognitive processes, but are actually matters of behavioral content. I will argue first by analogy which I draw from Lewis Thomas (1980, pp. 16-17, 140).[1]

Tuberculosis, which involves at least five different organ systems, is widely known to be complexly interrelated to a large number of content-related demographic characteristics, such as age, gender, social class, ethnicity, nutrition, and geography. These relationships are so complex that scientists once despaired of ever discovering any clarifying, more fundamental processes that could account for the disease. Eventually, however, one fundamental determinant was discovered -- a bacillus -- whose presence intercorrelated with the wide range and variety of the content-related aspects of the disease and associated individual differences. Once this cause (i.e., this process) was found, the complex content-related aspects of the disease were suddenly made "simple" and the individual and population characteristics became understandable as correlates of, not the causes of, the disease.

With respect to the complex content of dysfunctional client behavior, its determinants are, in one sense, the basic behavioral processes. And, once we know the behavioral processes underlying this content-related

activity, the complexity of that activity becomes simpler, clearer, and easier to understand. Admittedly, this process-based account may not be a romantic one, but then neither is a scientific account of how physical and chemical processes explain a burnt orange sunset against a high sky of cirrus clouds -- but it is an effective account, nonetheless, for practical action. My point is not to make behavioral processes more important than behavioral content though -- only to distinguish between the two. Knowledge of both is necessary for effective applied behavior analysis. Sometimes, however, process and content become confused, especially in the area of cognition. So, let me explain further.

Cognition as Process or Content

As just described, behavioral processes refer to the generic principles of behavior, whereas behavioral content refers to everyday behavioral activity as described in ordinary language terms. Much of the confusion about the role of cognition in applied behavior analysis and behavior therapy has to do with whether cognition is taken to be process or content. For their part, the cogniphobics deny cognition-as-process for its inherent mentalism, but also often deny cognition-as-content for fear of taint by mentalistic language (see Hineline, 1980). That is unfortunate because the cogniphobics may be overlooking important behavioral relationships described in the natural language of the community of therapists from other persuasions (cf. Pratt, 1985). For their part, the cogniphiliacs eschew cognition-as-content, that is, as types of behavioral interactions explainable in terms of basic behavioral processes; instead, they embrace cognition-as-process, where cognition refers to nonbehavioral mediational causes.

I am afraid I must disagree with the cogniphiliacs on this last point. An ordinary language analysis of the term "cognition" shows it to be behavior-in-context or behavioral content (Wittgenstein, 1953, 1958; see Day, 1969b; Deitz & Arrington, 1984; Morris, 1985c, 1986b; Skinner, 1945). That is, to speak the word "cognition" is to emit a verbal operant under the discriminative control of the occurrence of certain sorts of behavior-environment interactions in their historical and current contexts. Or, more traditionally, "cognition" is a name we give to certain aspects of our clients' behavior often described further by subclasses of ordinary language terms such as perceiving, thinking, remembering, problem-solving, and so forth. Thus, "cognitive" is an adjective, "cognitively" an adverb, and "cogitating" a verb -- all describing particular contents of client behavior.

In its a noun form, unfortunately, "cognition" often becomes reified into a hypothetical construct and internal cause of behavior. Curiously, cogniphiliacs apparently recognize this problem in logic when dealing with personality traits. For instance, they seem cognizant of the error of describing behavior as aggressive and then turning around to explain it in terms of an underlying trait of aggressiveness. Likewise, if clients told us they selected their romantic partners poorly, we would not then explain their behavior as a manifestation of a new syndrome called a "selection disorder."[2] Unfortunately, cogniphiliacs are not so careful with the descriptive term, "cognition." Aggressiveness, selection disorders, and cognition, however, are not process-based accounts of behavior; rather, they are what is to be explained through the basic behavioral processes, which bring order to behavioral variability that otherwise appears complex beyond cognition. To put this somewhat glibly: Whereas the cogniphiliacs adhere to Rene Descartes' Latin, "Cognito, ergo sum" -- "I think, therefore

I am," the more accurate contextual characterization of cognition is "Sum, ergo cognito" -- "I am, therefore I think." As the playwrite George F. Kaufmann once quipped about people who had their French and Roman history backwards, we might say that the cogniphiliacs have their philosophy backwards -- they have their Descartes before their Horace.

Conclusion

In summary, I will be brief. On the side of cognition, the cogniphiliacs are right: Applied behavior analysis needs to provide a more comprehensive and explicit account of behavior-environment interactions. Their argument for explanatory cognitive and biological concepts, though, often seems little more than a reversion to mentalism. On the side of behavior, the cogniphobics are right: Cognition-as-process and biological reductionism as explanation have no place in a natural science of behavior. The cogniphobics' typical lack of reference to historical and current contextual conditions, however, suggests that they themselves have been somewhat responsible for allowing their analysis of behavior to be misunderstood as being static, excessively environmentalistic, and mechanistic. They are, in part, responsible for the misconceptions of the science of behavior.

Finally, I realize that I will be accused of having presented cogniphobics and cogniphiliacs as straw figures for attack -- figures that represent no one in particular. If so, then no one should be offended. Perhaps -- but I really do not think these are straw figures. Moreover, I should be very surprised if I have offended no one, for I suspect that a little cogniphilia or cogniphobia lurks in all of us. For that, considerations of context may be the treatment of choice.

Footnotes

1. I would like to thank Don Baer for suggesting this analogy to me in another context (see also Baer, 1984, pp. 547-549). He is not, however, responsible for any misuse I may make of it.

2. I would like to thank an unnamed other for introducing me to the concept of "selection disorders."

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